

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Adalbert HUBER et al.

Examiner: Leszek B. Kiliman

Serial No.: 10/518,464

Group Art Unit: 1773

Filed: October 18, 2005

Confirmation No.: 3174

Title: UV-STABILISED PARTICLES

**BRIEF ON APPEAL UNDER 37 C.F.R. § 41.37**

Mail Stop  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This is an appeal from the decision of the Examiner rejecting claims 1, 3-11 and 14-19 of the above-identified application. The claims were subject to more than one non-final rejection on essentially the same grounds. See 37 C.F.R. §41.31(a)(1).

**(1) REAL PARTY IN INTEREST**

The application is assigned of record to Merck Patent GmbH, who is the real party in interest herein.

**(2) RELATED APPEALS AND INTERFERENCES**

Appellants, their legal representative and the assignee are not aware of any related appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the instant appeal.

### **(3) STATUS OF THE CLAIMS**

Claims rejected: Claims 1, 3-11 and 14-19.

Claims allowed: (none)

Claims canceled: Claims 2, 12 and 13.

Claims withdrawn: (none)

Claims on Appeal: Claims 1, 3-11 and 14-19 (Copy of claims on appeal in attached Appendix).

### **(4) STATUS OF AMENDMENTS**

No amendments after any maintained Final Rejection have been proposed by Appellants. An amendment after Final Rejection was filed on March 28, 2007, but the Finality of the previous rejection was withdrawn at the Appellants' request and the amendment was entered.

### **(5) SUMMARY OF CLAIMED SUBJECT MATTER**

Appellants' invention (independent claim 1 on appeal) is directed to UV-stabilised particles, comprising inorganic particles and one or more UV protection agents or UV stabilisers (see, e.g., page 1, line 27, to page 2, line 5; and page 2, line 34, to page 3, line 14; of the instant specification. The UV-stabilised particles are sheathed on the surface with a polymer layer of immobilisable polymer or polymer mixture and the polymer layer comprises or includes the one or more UV protection agents or UV stabilisers; see, e.g., page 5, lines 12-16; page 6, line 34, to page 8, line 14; and original claims 1 and 2; of the instant specification. The UV-stabilised particles reflect or absorb light having wavelengths of from 290 to 500 nm; see, e.g., page 1, lines 3-5, of the instant specification.

Appellants' invention (e.g., claim 10 on appeal) is also directed to a process for the production of the UV-stabilised particles wherein one or more UV protection agents or UV stabilisers are either applied directly to the inorganic particle surface to be protected and immobilised with a polymer or polymer mixture applied subsequently or applied to the surface and immobilised irreversibly in one step in the form of a mixture with the polymer or polymers; see, e.g., page 6, line 34, to page 8, line 14; of the instant specification.

#### **(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

The following outstanding grounds of rejection are requested to be reviewed on appeal. For each ground, any separate consideration of the claims subject to that rejection are indicated.

1. The rejection of claims 1, 3-11 and 14-19, on appeal, under 35 U.S.C. §103, as being obvious to one of ordinary skill in the art over Winter (U.S. Patent No. 5,563,242).

- a. Claims 1, 3-7, 10, 14-16 and 19, on appeal, are grouped together.  
Claims 8, 9 and 17-18, on appeal, are separately grouped together for the
- b. reasons given in the argument.
- c. Claim 11, on appeal, is separately grouped for the reasons given in the argument.

#### **(7) ARGUMENT**

1a. Claims 1, 3-7, 10, 14-16 and 19, on appeal, are not rendered obvious to one of ordinary skill in the art over Winter (U.S. Patent No. 5,563,242), thus, the rejection under 35 U.S.C. §103 of these claims is not supported.

No basis is set forth on the record, or apparent from the cited reference, that Winter

provides any disclosure related to inorganic particles, such as pigment particles, which are coated with a polymer having UV protection agents or UV stabilisers. Claim 1, on appeal, recites: “inorganic particles” .. “wherein the particles are sheathed on the surface with a polymer.”. Appellants have pointed out this distinction in every reply and the Office actions have failed to address how Winter meets or suggests the sheathed “inorganic” particle element of the claims.

Winter discloses benzotriazole UV absorber compounds of the formula (I) and discloses the use of such compounds as a stabilizer in an organic material subject to thermal, oxidative or actinic induced degradation; see, e.g., col. 3, lines 18-30, col. 4, lines 41-45, col. 5, lines 25-30, and cols. 6-8. The organic material in which Winter provides the benzotriazole UV absorbers is a polymer film which is part of a multilayer construct of (a) an electrocoat primer, (b) a base or color coat, (c) a clear coat and (d) the stabilizer coat containing the benzotriazole compound of formula (I); see, e.g., col. 4, lines 41-58.

Winter provides no suggestion, whatsoever, of the use of their benzotriazole compounds for UV stabilization of inorganic particles, e.g., inorganic pigment particles. Winter does not disclose or suggest providing its layer of polymer with the benzotriazole UV absorber compound of the formula (I) on an inorganic particle. The disclosure in Winter of providing a film layer as part of a multilayer coating construct gives no hint to coat inorganic particles, such as pigment particles, with a layer of such material.

Further, Winter fails to suggest or evidence any reason for using its benzotriazole compounds for UV stabilization of inorganic particles. Winter is specific to the use of the UV stabilizers for stabilizing organic materials, particularly polymers, in a coating layer construct. There is no suggestion from the reference to use the benzotriazoles as a sheath for UV stabilization of inorganic particles, particularly inorganic pigment particles, and the reference fails to provide a reason for one of ordinary skill in the art to use the Winter

materials for such a purpose.

The last Office action mailed December 12, 2007, argues (bottom of page 2) that Winter does not specifically teach the particle shape but that optimization of the particle shape would have been obvious to one of ordinary skill in the art. But the issue is not particle shape. The issue is that Winter does not teach a UV stabilised coating of any “inorganic” particle component at all, regardless of shape. Winter only teaches the use of its benzotriazole compounds for UV stabilization of organic polymer materials; see, e.g., col. 2, lines 6-11; col. 2, lines 26-27; col. 3, lines 18-26; col. 4, lines 41-45; col. 5, lines 25-62; and col. 6, line 24, to col. 8, line 45.

The last Office action mailed December 12, 2007, also argues (page 3) that the claims on appeal contain open “comprising” language and, thus, are not limited to inorganic particles. Appellants do not dispute this interpretation, however, the claims do require inorganic particles which are “sheathed on the surface with a polymer layer of immobilisable polymer or polymer mixture and the polymer layer comprises or includes the one or more UV protection agents or UV stabilisers.” Winter fails to disclose or suggest inorganic particles sheathed in this manner whether or not there are also organic materials present.

The Office action mailed December 12, 2007, also points out (page 3) that Winter discloses the use of organic or inorganic pigments at col. 4, lines 46-58. However, Winters discloses that the organic or inorganic pigments are contained in a base or color coat of a film-forming binder and the benzotriazole UV absorber can be added to this coating. In this embodiment of Winter, the UV absorber is added on the basis of the film-forming binder – which, in the context of Winter, must be an organic polymer material which is UV stabilized by such addition. Winter provides no teaching – or any suggestion of a desire – that, if inorganic pigment particles are present, they would be sheathed with the benzotriazole compound. Further, appellants urge that such a multi-layer coating construct in this

embodiment of Winter would not be considered by one of ordinary skill in the art to be a sheathed inorganic particle.

For the above reasons, it is urged that Winter, when considered as a whole, fails to render the invention of claims 1, 3-7, 10, 14-16 and 19, on appeal, obvious to one of ordinary skill in the art. Thus, the rejection of these claims under 35 U.S.C. §103 is not supported on the record.

1b. Claims 8, 9 and 17-18, on appeal, are not rendered obvious to one of ordinary skill in the art over Winter (U.S. Patent No. 5,563,242), thus, the rejection under 35 U.S.C. §103 of these claims is not supported.

The arguments made regarding Issue 1a. above apply equally here and are incorporated herein by reference. Claims 8, 9 and 17-18, on appeal, are directed to the UV stabilised particles based on a particularly defined inorganic particle. Such recitation provides an additional basis for nonobviousness over Winter. As discussed above, Winter provides no teaching or suggestion of sheathed inorganic particle materials, as claimed. Winter even more clearly fails to teach or suggest sheathed inorganic particles based on particular types of inorganic material as defined by these claims on appeal. There is no suggestion at all of such particular inorganic particles in the Winter materials or any teaching which would suggest the desirability of using such a material in Winter.

Accordingly, for this additional reason, it is urged that Winter, when considered as a whole, fails to render the invention of claims 8, 9 and 17-18, on appeal, obvious to one of ordinary skill in the art. Thus, the rejection of these claims under 35 U.S.C. §103 is not supported on the record.

1c. Claim 11, on appeal, is not rendered obvious to one of ordinary skill in the art over

Winter (U.S. Patent No. 5,563,242), thus, the rejection under 35 U.S.C. §103 of this claim is not supported.

The arguments made regarding Issue 1a. above apply equally here and are incorporated herein by reference. Claim 11 recites the use of a particularly defined polymer in the method of preparing the UV stabilised particles. Such recitation provides an additional basis for nonobviousness over Winter. Winter provides no teaching or suggestion of a polymer which is an LCST and/or UCST polymer or polymer mixture of LCST and/or UCST polymers for its materials. There is no suggestion at all of such polymer material or any teaching which would suggest the desirability of such a material in Winter.

Accordingly, for this additional reason, it is urged that Winter, when considered as a whole, fails to render the invention of claim 11, on appeal, obvious to one of ordinary skill in the art. Thus, the rejection of this claim under 35 U.S.C. §103 is not supported on the record.

For all of the above reasons, it is urged that the decision of the Examiner rejecting claims 1, 3-11 and 14-19, on appeal, is in error and should be reversed.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

/John A. Sopp/

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John A. Sopp, Reg. No. 33,103  
Attorney/Agent for Applicant(s)

MILLEN, WHITE, ZELANO  
& BRANIGAN, P.C.  
Arlington Courthouse Plaza 1, Suite 1400  
2200 Clarendon Boulevard  
Arlington, Virginia 22201  
Telephone: (703) 243-6333  
Facsimile: (703) 243-6410

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JAS:ab



## **CLAIMS APPENDIX**

1. UV-stabilised particles, comprising inorganic particles and one or more UV protection agents or UV stabilisers,  
wherein the particles are sheathed on the surface with a polymer layer of immobilisable polymer or polymer mixture and the polymer layer comprises or includes the one or more UV protection agents or UV stabilisers; and  
wherein the particles reflect or absorb light having wavelengths of from 290 to 500 nm.
3. UV-stabilised particles according to Claim 1, wherein the UV protection agent or the UV stabiliser is selected from the group consisting of UV absorbers, UV reflectors, UV scattering agents, antioxidants, dyes, carbon-black particles, free-radical scavengers, microtitanium and mixtures thereof.
4. UV-stabilised particles according to Claim 3, wherein the UV protection agent or the UV stabiliser is selected from the group consisting of benzophenones, triazoles, triazines, titanium dioxide nanoparticles, iron oxide nanoparticles, carbon black, hindered amines (HALS) and mixtures thereof.
5. UV-stabilised particles according to Claim 1, wherein the particles comprise from 0.001 to 1000% by weight of UV protection agent or UV stabiliser, based on the particles.
6. UV-stabilised particles according to Claim 1, wherein the polymer is applied to the particle surface by precipitation in water and/or an organic solvent.
7. UV-stabilised particles according to Claim 1, wherein the inorganic particles are platelet-shaped, spherical or needle-shaped.
8. UV-stabilised particles according to Claim 1, wherein the inorganic particles are selected from the group consisting of BiOCl platelets, TiO<sub>2</sub> particles, fluorescent pigments, holographic pigments, pearlescent pigments, interference pigments, multilayered pigments, metal-effect pigments, goniochromatic pigments, and conductive and magnetic pigments.
9. UV-stabilised particles according to Claim 8, wherein the pearlescent pigments, interference pigments, multilayered pigments and goniochromatic

pigments are based on natural or synthetic mica,  $\text{Al}_2\text{O}_3$ ,  $\text{TiO}_2$ ,  $\text{SiO}_2$ ,  $\text{Fe}_2\text{O}_3$ , glass or graphite platelets.

**10.** Process for the production of UV-stabilised particles according to Claim 1, wherein one or more UV protection agents or UV stabilisers are either applied directly to the inorganic particle surface to be protected and immobilised with a polymer or polymer mixture applied subsequently or applied to the surface and immobilised irreversibly in one step in the form of a mixture with the polymer or polymers.

**11.** Process according to Claim 10, wherein the polymer is an LCST and/or UCST polymer or polymer mixture of LCST and/or UCST polymers.

**14.** A surface coating, water-borne coating, powder coating, paint, printing ink, security printing ink, plastic, concrete, cosmetic, agricultural sheeting, tent awning, laser markable paper or plastic, or pigment composition comprising UV-stabilised particles according to Claim 1.

**15.** A method for providing UV protection to a composition which comprises incorporating UV-stabilised particles according to Claim 1 in the composition.

**16.** A composition comprising the UV-stabilised pigments according to Claim 1.

**17.** UV-stabilised particles according to Claim 1, wherein the inorganic particles are:  $\text{SiO}_2$  beads which are uncoated or coated with one or more metal oxides; white pigments selected from titanium dioxide, zinc white, paint-grade zinc oxide, lead white, zinc sulfide or lithopone; black pigments selected from iron-manganese black, spinel black or iron oxide black pigments; color pigments selected from chromium oxide, chromium oxide hydrate green, chromium green, cobalt green, ultramarine green, cobalt blue, ultramarine blue, iron blue, manganese blue, ultramarine violet, cobalt and manganese violet, iron oxide red, cadmium sulfoselenide, molybdate red, ultramarine red, iron oxide brown, mixed brown, spinel and corundum phases, chromium orange, iron oxide yellow, nickel-titanium yellow, chromium-titanium yellow, cadmium-zinc sulfide, chromium yellow, zinc yellow, alkaline earth metal chromates, Naples yellow and bismuth vanadate; or magnetic pigments selected from  $\text{CrO}_2$ ,  $\text{Fe}_2\text{O}_3$ ,  $\text{Fe}_3\text{O}_4$ , Co-modified iron oxides, Ba ferrites, pure iron pigments and graphite platelets.

**18.** UV-stabilised particles according to Claim 1, wherein the inorganic particles are BiOCl platelets.

**19.** UV-stabilised particles according to Claim 1, wherein the inorganic particles are inorganic pigment particles.

## **EVIDENCE APPENDIX**

(None)

**RELATED PROCEEDINGS APPENDIX**

(None)